UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

December 6, 2000

MEMORANDUM TO: [redacted]

THRU: D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch

FROM: Robert Evans, PE, CHP, Health Physicist
Nuclear Materials Inspection Branch
RJE 12/6/00

SUBJECT: [redacted] involved the possible burial of radioactive material at a property located on or near a former licensee. Spencer Chemical Company had been issued at least five U.S. Atomic Energy Commission (AEC) licenses for possession of source and special nuclear material between 1958 and 1964. Confirmatory radiological surveys of the property were performed by the AEC during 1964, by the State of Kansas during 1982-1983, and by the NRC during 1992. These surveys confirmed that no residual contamination above regulatory limits remained at the site from previous licensee operations.

During September 2000, the NRC became aware that an individual had informed the press that radioactive material may still be buried at the former Spencer Chemical site, Jayhawk Works, in two locations. On October 26, 2000, the NRC conducted an interview with the [redacted] who provided information regarding these two burial pits. One of the two locations was inspected on October 26, 2000, while the second site was previously reviewed by the NRC during 1992.

The onsite tour of the first site failed to identify any evidence of a burial pit. The inspector conducted a surface survey using a microRoentgen meter. No measurement exceeded background levels. The site was noted to contain several shallow depth monitoring wells and numerous surface disturbances. The property was apparently used for ammonium nitrate ordinance testing several decades ago, and the surface craters were consistent with this type of testing. A representative of the plant, currently owned by Jayhawk Fine Chemicals, was contacted. The representative was only vaguely aware of the monitoring wells and was not aware if the wells had ever been sampled or what the wells were sampled for.

Based on the review of the AEC docket file and the State of Kansas' records, interview with the [redacted], and radiological surveying of the site, the NRC inspector determined that there was no evidence that an undocumented burial pit containing radioactive material still exists at the former Spencer Chemical Company plant. [redacted] Therefore, this concludes DNMS' review of this [redacted]

OI conducted an interview of the [redacted] on October 26, 2000. In your Memorandum dated November 22, 2000, you requested that we review the transcript and address the following:

Portions withheld - EX. 7C

C/1

- **Whether any new safety/technical concerns were identified**

  No new safety concerns were identified. The identified two possible locations where radioactive material may be buried. One area was inspected by the NRC during September 1992, and the second area was inspected on October 26, 2000. Radioactive material was not identified at either location. However, the NRC could only conduct surface inspections which may be inadequate for identification of buried material. Subsurface sampling is not recommended because there was no documented or observed evidence that radioactive material was buried in this second area and because had no first hand knowledge of the burial. All information provided to the NRC inspector and investigator from the was based on hear-say information only.

- **Whether any new concerns warrant additional review by the NRC**

  No new concerns were identified. However, the specifically requested that someone (the property owners or a regulatory agency), conduct additional testing of the location of the burial pit west of the county road to ensure that the area did not actually contain a radioactive burial pit. Once this testing was concluded, then would use the information to quell the concerns of private citizens that may come to in the future.

- **Whether violations of NRC requirements may have occurred**

  No violations of NRC requirements were identified.

Enclosure: Site Status Report

Portions withheld - EX 7c

ATTACHMENT 1

Site Status Report

Licensee Name: Spencer Chemical Company
Kansas City, Missouri

Site Name: Jayhawk Works

Site Address: Pittsburgh, Kansas

Regional Contact: Robert Evans, PE, CHP, Health Physicist
Nuclear Materials Inspection Branch
Division of Nuclear Materials Safety

Background Information:

The Jayhawk site was originally used as an ordinance plant during WWII. During 1948, the U.S. Government conveyed the facility to Spencer Chemical Company. The site was sold to Gulf Oil Chemical Company during 1964. Gulf Oil terminated production activities during 1983. In 1984, Gulf Oil merged with Chevron, and Chevron began selling off portions of the property to other companies, including Allco Chemical Company, Thermex Energy, Koch Refining, Allied Signal, and Jayhawk Fine Chemicals/Laporte. The site continues to be regulated by the State of Kansas for non-radioactive hazardous materials including volatile organic compounds.

Spencer Chemical Company had been issued at least 5 AEC licenses between 1958-1964:

- License R-218 (Docket 40-2136) was issued on January 20, 1958, and expired on March 31, 1960. The license allowed Spencer Chemical to possess 10 kilograms of thorium oxide-uranium oxide mixture and 1000 kilograms of thorium oxide for research and development.

- License SNM-154 (Docket 70-146) was issued on January 20, 1958, and expired on January 31, 1964. This license allowed Spencer Chemical to possess up to 1200 kilograms of uranium-235 for use in a uranium oxide pilot plant.

- License SNM-329 (Docket 70-340) was issued on October 1, 1959, and expired on September 30, 1962. This license allowed the company to possess up to 1000 kilograms of uranium for chemical processing of uranium enriched to 5 percent in uranium-235.

- Spencer Chemical also had at least two other source material licenses. License C-3571 allowed the company to possess 300 pounds of uranium magnesium fluoride scrap material and 5000 pounds of uranium metal or compounds for experimental work. License C-4352 had also been issued to the company, but information about this license was not immediately available during the inspection.

Information provided in the docket file indicated that Spencer Chemical ceased operations and disposed of all radioactive material by May 1961. The site was decommissioned and the AEC performed a final closeout inspection of the Jayhawk Works plant on April 30, 1964. Records

indicate that the licensee burned and buried potentially contaminated building material as part of the decommissioning process.

The State of Kansas issued Gulf Oil Chemical Corporation License 26-C229-02 during September 1982 for possession, decontamination, and disposal of residual uranium-235 that was present on a concrete foundation at the Jayhawk plant. Gulf Oil performed additional decontamination work and conducted a final survey. After Gulf Oil performed its final survey, the State of Kansas conducted confirmatory surveys during November 1982 and January 1983. The State license was subsequently terminated during July 1983.

The Jayhawk Works site was listed on the first Oak Ridge National Laboratory Terminated Site list, and an NRC inspector (Wes Holley) performed a tour of the site during September 1992 with State of Kansas representatives. No NRC-regulated radioactive material was identified during this tour, although naturally occurring radioactive material (radium-226 and natural uranium) was identified. Spencer Chemical Company's terminated license file was closed by Region IV during November 1992.

During September 2000, the U.S. DOE released the "1995 List of Sites Reviewed for Possible Past Involvement in Nuclear Weapons Related Activities," and the former Spencer Chemical site was included on that list. Newspapers in the vicinity of the former site ran a series of articles about the company during September-October 2000. The articles quoted an individual who claimed that radioactive material was still buried at the site. This information was reported to Region IV by the State of Kansas and was the basis for

Interview with

On October 26, 2000, the was interviewed by a Region IV OI investigator and a DNMS inspector. A State of Kansas representative observed the interview. The stated that several individuals had come forward in the past and had reported to that radioactive material may still be buried at the former Jayhawk Works site. During the interview, the pointed out two separate locations on an aerial map that may still have burial pits containing radioactive material. (A copy of a topographical map used during the NRC/State inspection of September 1992, is attached. The two sites identified by the are marked on the map.)

The two sites consisted of the area where trash was dumped and burned in the past (Area 4 on the map), and an area west of the burn pit (the burn pit is shown on the map as Area 2) by about one-third to one-half mile. Area 2 was previously known by the AEC and the NRC to be an area where scrap material had been burned and buried. The was asked if he was confusing Area 2 (the known burial pit) with the area he was pointing out on the map, but the reasserted that the area was referring to was a different location from Area 2. The area was referring to was situated about one-third to one-half mile west of Area 2.

Site Tour:

At the time of the onsite inspection, the former Jayhawk Works plant was owned and operated by the Jayhawk Fine Chemicals Corporation. The site is located on the eastern side of U.S. Highway 69 near Crestline, Kansas. The investigator, inspector, State of Kansas

Portions withheld - EX 7C

representative, and visited the Jayhawk Fine Chemicals site on October 26, 2000. One of two areas that were identified by the was toured, but the second area was not (Area 4) because this area had been taken into consideration during the NRC's September 1992 site inspection and was not accessible during the site tour.

The property that was inspected contained a thick cover of underbrush that was difficult to traverse. The inspector performed a visual and radiological survey of most of the property, but was unable to locate any evidence of radioactive material or a burial pit. The inspector used a Ludlum Model 19 microRoentgen meter (serial number 016337, calibration due date of April 11, 2001) to survey the surface for radioactive material. Background was about 0.01 millirems per hour and was measured at the county courthouse. No reading above background was observed during the site tour. Also, there was no evidence of a burial pit although the surface was covered with craters. The Jayhawk Works plant was previously an ordinance factory and the property being inspected was reputed to have been kused for detonation of ammonium nitrate explosives.

Nine monitoring wells were observed on the property. The thought the property was owned by Chevron, but telephone interviews with Chevron representatives in San Ramon, California, after the onsite inspection, revealed that the property in question was owned by Jayhawk Fine Chemicals. The Jayhawk plant safety, health & environmental manager was interviewed by telephone and the manager reported that he was only vaguely aware of the wells. His company did not install or sample the wells. The manager also noted that the property in question was only partially owned by Jayhawk Fine Chemicals. Most, if not all, monitoring wells were located on property just outside of the plant property line, therefore, the plant was not responsible for these wells. However, there is no evidence that the wells were installed as a result of burial of radioactive material in the area.

At the conclusion of the onsite inspection, the inspector informed the that the surface survey did not identify any radioactive material. The stated that he would prefer if the property owner or a regulatory agency conducted sub-surface surveys (core and water sampling) to ensure that radioactive material was not buried at this location. The would then use this information to help quell any concerns private citizens may have about the property in the future.

Conclusions:

The NRC inspector was unable to locate any evidence of a radioactive material burial pit at the site identified by the although the inspector could only conduct surface surveys. In summary, the assertion that radioactive material was buried at this location was not substantiated. Subsurface surveys are not recommended because there was no evidence (written or observed) that the new site contained a radioactive material burial pit and because the information provided to the NRC was based on hear-say information only.

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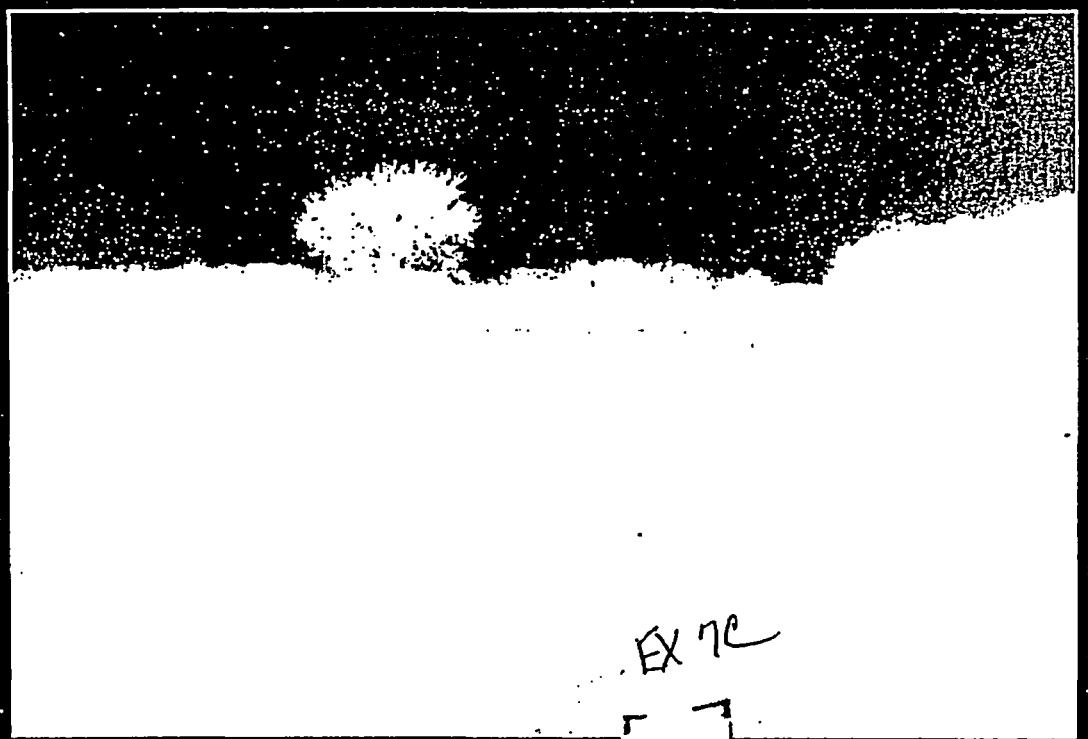
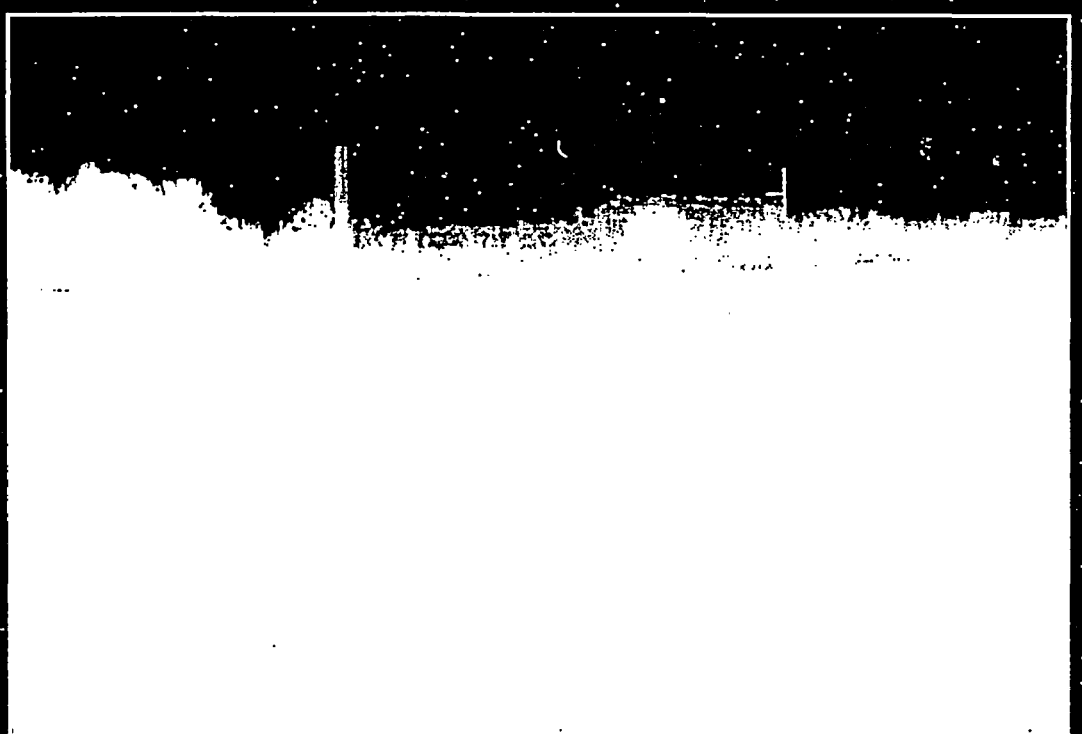
EX 7C

ATTACHMENT 2



EX 7C

Location of known burial pit in foreground with [redacted] burial pit in grove of trees in background.

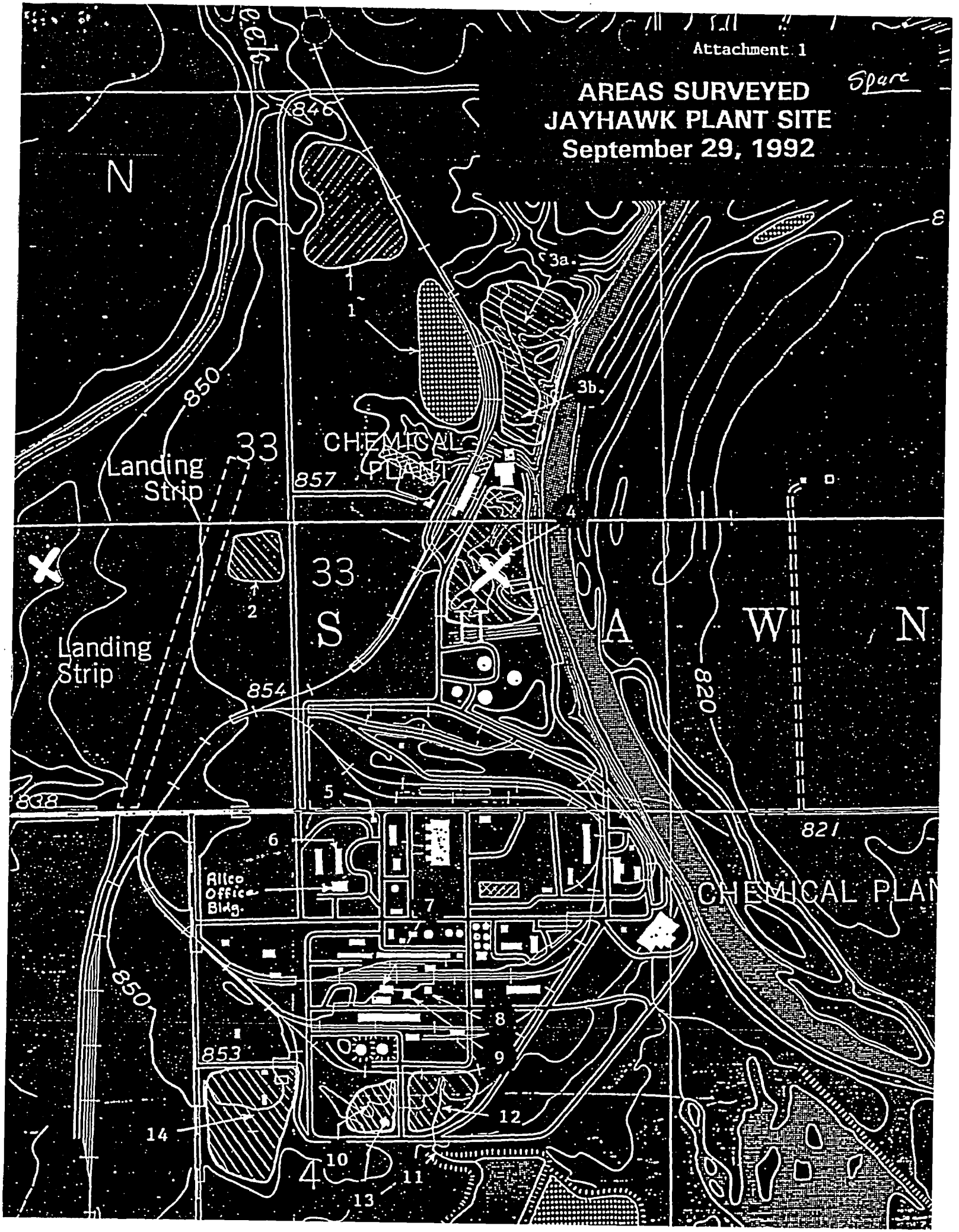


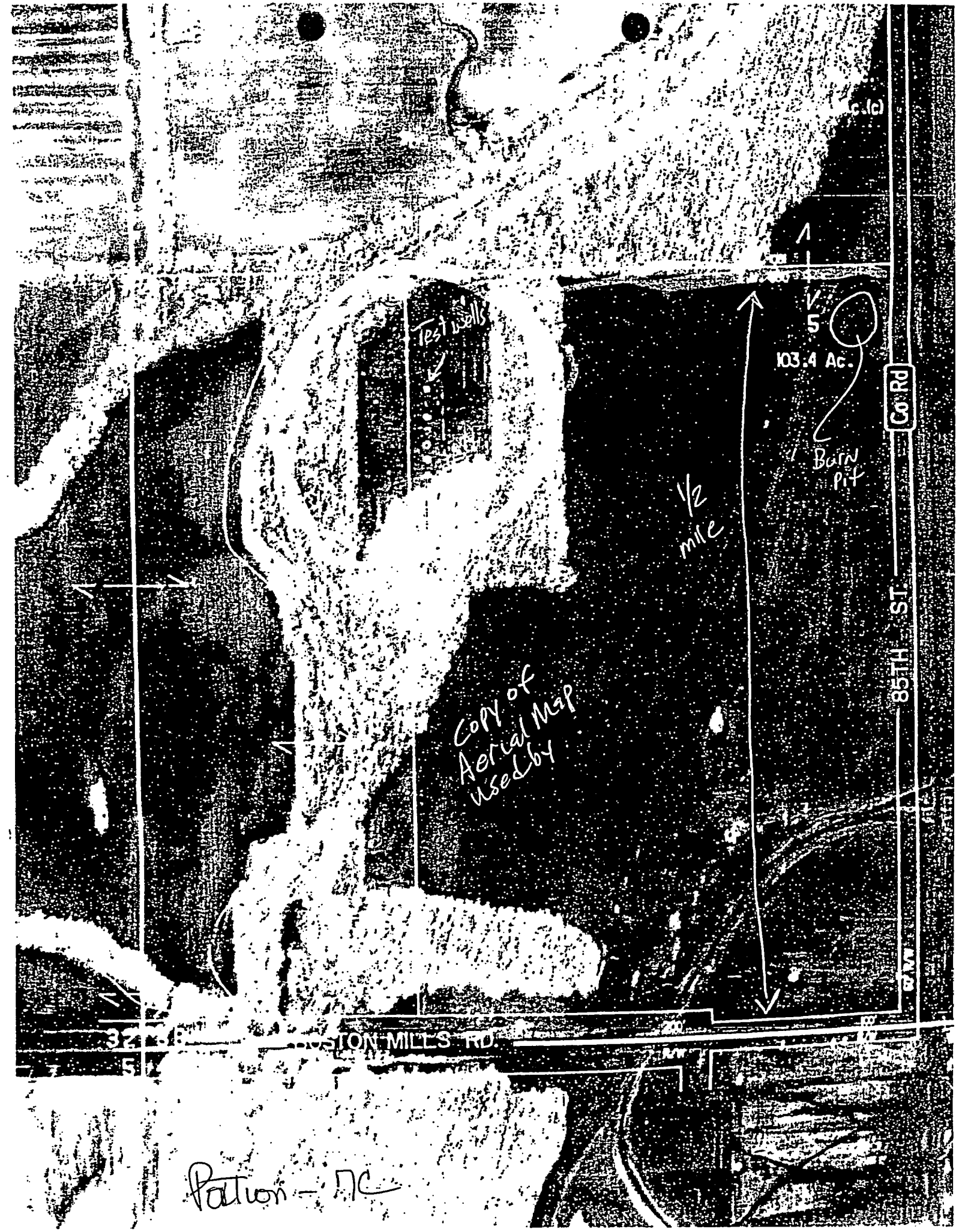
Location of known burial pit in foreground with Jayhawk plant in background.

Typical crater in area of suspected burial pit.

Typical monitoring well in area of suspected burial pit.

One of nine monitoring wells in area of suspected burial pit.


Attachment 1
AREAS SURVEYED
JAYHAWK PLANT SITE
September 29, 1992
Spare
N
846
850
33
Landing Strip
CHEMICAL PLANT
857
1
2
3a.
3b.
4
33
S
A
W
N
Landing Strip
854
820
868
5
821
6
Alico Office Bldg.
7
CHEMICAL PLAN
850
853
8
9
12
14
10
11
13
4


Test wells
103.4 Ac.
Barn Pit
1/2 mile
Co Rd
85TH ST.
ION MILLS RD.
Copy of Aerial Map used by
Patton - NC